United States
Office of Personnel Management

FWS Job Grading Standard
for
Machine Tool Operator

3431

Workforce Compensation & Performance Service
Office of Classification Programs
December 1997, HRCD-4

WORK COVERED

This standard covers nonsupervisory work involved in the set up, adjustment, and operation of conventional machine tools to perform machining operations in the manufacture of castings, forgings, or parts from raw stock made of various metals, metal alloys, and other materials; or machining operations required in the repair of such items. Work assignments normally involve standard or repetitive operations that can be performed on one machine.

The work requires a knowledge of basic machining processes and skill in performing machining operations such as boring, drilling, planing, milling, and turning on milling machines, radial or multiple spindle drill presses, planers, lathes, or equivalent types of conventional machine tools.

WORK NOT COVERED

The following kinds of work are not covered by this standard:

-- Operating power metal cutting saws such as metal cutting bandsaws or power hacksaws. (See Trades Helper or Power Saw Operating Series, WG-3422.)

-- Operating machines to make coil springs and other small metal items from wire, such as rings, buckle tongues, machine gun hooks, and similar items. (See Coil or Wire Machine Operating Series, WG-3407.)

-- Operating machines and performing other duties in the manufacture of tension, compression, and torsion springs, including the blocks and mandrels used in forming and shaping. (See Springmaking Series, WG-3454.)

-- Manufacturing or repairing parts and items of equipment by using a variety of machine tools and performing such processes as the initial planning of the work, selecting the material, laying out the work to be machined, determining the machines to be used and proper machining sequences, betting up the work in the machine, performing necessary machining operations, and performing precision handwork to fit, finish, and assemble machined parts and equipment. (See Machinist, WG-3414.)

TITLES

Jobs covered by this standard are to be titled *Machine Tool Operator.*

GRADE LEVELS

This standard does not describe all possible levels at which jobs might be established. If jobs differ substantially from skill, knowledge, and other requirements described in the grade levels of this standard, they may be graded above or below these grades based on the application of sound job grading methods.

General: The WG-8 Machine Tool Operator typically operates a machine tool to perform a specific machining operation in the machining of parts, castings, forgings, or raw stock of various metals and metal alloys and other machinable materials. Assignments are usually to the same type or closely related types of machine tools which have similar spindle and table movements; use comparable speed and feed controls; require the same type of cutting tools; or which perform essentially the same machining operation. The machine tools operated range from those which are manually controlled to those which are completely automatic.

The Machine Tool Operator, WG-8, usually operates machines of only one type to carry out production runs involving standard operations. New jobs are normally set up in the machine and detailed operating instructions are provided by a higher grade worker. The worker at the WG-8 level controls the machine feeds and speeds, and changes and uses different cutting tools for successive operations on any one machine. He insures that dimensions meet those prescribed by blueprints, sketches, or other instructions through the use of various standard measuring instruments commonly used in the machine shop. He makes minor changes in machine setup such as realigning for different sizes or changes in the shape of the work piece.

Skill and Knowledge: The WG-8 Machine Tool Operator is skilled in performing machining operations on conventional machine tools such as lathes, boring mills, shapers, planers, milling machines, grinding machines, or radial drills after the machine has been set up and checked for proper operation by a higher grade worker. Machines, such as numerically controlled machine tools, are normally operated only in the automatic mode by workers at this level, i.e., operation of the machine requires no manual input on the part of the Machine Tool Operator.

He follows detailed oral or written instructions concerning the location of needed dimensions on blueprints, sequence of machine operations, machine feeds and speeds, tools to be used, alinement processes, and predetermined machined dimensions.

He alines parts in the machine according to set methods and given reference points, exercising care to keep material, holding fixtures, and machine stops clear of chips and particles.

He uses a knowledge of machine operation to enable him to recognize defective tooling, improper coolant flow, the need for changing speeds or feeds, machine malfunctions, or obvious dimensional deviations and either corrects the problem by

adjusting the machine, cutting tool, or fixture or obtaining assistance from the supervisor or a higher grade worker.

The Machine Tool Operator at this level uses measuring instruments such as scales, micrometers, and various standard or preset snap, plug, or ring gages to check the accuracy of dimensions or he maintains dimensions through the use of fixtures or preset machine stops, depending upon the dimensional tolerances allowed.

Responsibility: The WG-8 Machine Tool Operator is responsible for following detailed oral or written instructions from the supervisor or higher grade worker which tells him the dimensions, machine to be used, machining sequence, proper feeds and speeds, and appropriate cutting tools for each operation. The worker at this level is responsible for insuring dimensional accuracy of machined parts in accordance with instructions provided and through the use of the machine setup provided by a higher grade worker.

The WG-8 operator is responsible for proper and safe operation of the machine tool. He is continually aware of whether tools are sharp, the coolant flow is adequate, dimensions are being held, or fixtures, holding devices, or the entire setup needs adjustment, and determines at what point the machine should be stopped and adjustments made.

The work may be checked during progress. A higher grade worker or supervisor is available for advice and assistance on any work problem encountered and checks to see that assignments are completed according to instructions provided.

Physical Effort: The WG-8 Machine Tool Operator's work requires standing, stooping, bending, and reaching. He frequently handles objects weighing up to 4.5 kilograms (10 pounds) and occasionally objects weighing up to 18.6 kilograms (40 pounds); however, hoists, hand trucks, lifts, and other workers are available to assist with heavier items.

Working Conditions: The WG-8 Machine Tool Operator works inside in areas that are usually noisy and dirty, and where there is a constant danger to the skin and eyes from flying metal chips, abrasive .particles, and hot metal; skin irritation from contact with coolants, lubricants, and abrasive compounds; danger to the fingers, hands, and other parts of the body from cutting tools, grinding wheels, rotating work pieces, and moving parts of machines.

3431-9 Machine Tool Operator, Grade 9 3431-9

General: The WG-9 Machine Tool Operator operates one or more of the types of machine tools operated by workers at the WG-8 level to perform assigned machining operations which may require the use of various machine tool attachments. While the WG-8 operator receives assistance on machining problems and has the machine set up and checked before operating it, the WG-9 is expected to make his own set ups and independently resolve machining problems during the actual machining process.

The WG-9 Machine Tool Operator receives work from the supervisory or higher grade worker in the form of work orders accompanied by blueprints and instructions for the machine and attachments to be used and the processes to be performed. From this information he obtains tools and materials, notes tolerances, sets up machine, and performs machining operations according to instructions received. He consults with the supervisor or higher grade worker on unusual problems encountered and submits completed work for check for quality and whether it meets the specifications required.

Skill and Knowledge: The WG-9 Machine Tool Operator is skilled at operating the same machine tools as workers at the WG-8 level; however, he extends the scope of operations on these machine tools by applying additional skill in using various standard machine attachments such as rotary tables, magnetic chucks, gear changing boxes, angular drive heads, taper attachments, and universal milling attachments; and is skilled in performing precision work on parts which present complex configurations and close tolerances between interrelated surfaces.

He operates numerically controlled machine tools when the manual input required is limited to changes in coolant flow, increases or decreases in speeds or feeds, or stops are programmed for dimensional checks or minor adjustments.

While the WG-8 Machine Tool Operator has most jobs set up in the machine for him, the WG-9 normally sets up his own jobs in the machine to be operated. The WG-9 must be sufficiently familiar with blueprints to enable him to visualize the finished part in order to identify critical surfaces, dimensions, and tolerances; and determine the proper use of jigs and fixtures provided. From the blueprints and work order, he determines and obtains materials and cutting tools for the job.

The WG-9 Machine Tool Operator uses a knowledge of the metal or material to be machined, the characteristics of cutting tools, and surface finishes to enable him

to select the proper cutting tools and correct machine feeds and speeds necessary to perform the job.

He achieves and maintains critical dimensions and tolerances during the machining process through his skill in using measuring instruments such as scales, micrometers, vernier calipers and height gages, and various types of snap, plug, and ring gages.

Responsibility: The WG-9 Machine Tool Operator receives work assignments from his supervisor or a higher grade worker in the form of word orders accompanied by blueprints and oral or written instructions for the machine or machines and attachments to be used, sequence of operations on each machine, and critical dimensions or unusual aspects of the job. From these, he is responsible for obtaining the prescribed fixtures, tools, and materials; setting up the job in the machine; and maintaining dimensions and tolerances to meet job specifications.

The WG-9 Machine Tool Operator independently determines the proper machine speeds and feeds based on the accuracy desired and the type of material to be machined. He is responsible for making adjustments to the machine during operation in order to insure dimensional accuracy and type of finish required. He must determine the most proper and efficient method of setting up the job in the machine, and recognize the need for replacing or adjusting dull or chattering tools.

The supervisor or a higher grade worker is available for consultation or advice on any problems encountered and to check completed work to see that it meets accuracy and quality requirements of the job.

Physical Effort: The physical effort required at this level of work is the same as that required at the WG-8 level.

Working Conditions: The working conditions encountered at the WG-9 level are the same as those encountered at the WG-8 level of work.